Valid as from the academic year 2015-2016

Technology and Design of Artificial Organs (E074120)

Course specifications

Lecturers in academic year 2015-2016

Van Nooten, Guido
GE10 lecturer-in-charge
De Somer, Filip
GE10 co-lecturer
Eloot, Sunny
GE01 co-lecturer

Offered in the following programmes in 2015-2016

Bridging Programme Master of Science in Biomedical Engineering  6 A
Bridging Programme Master of Science in Biomedical Engineering  6 A
Master of Science in Biomedical Engineering                6 A
International Master of Science in Biomedical Engineering   6 A
Master of Science in Biomedical Engineering                6 A

Teaching languages

English

Keywords

Artificial organs, design

Position of the course

Insight in the technology and design of artificial organs with specific attention to the blood rheology, electromechanics, biocompatibility and material choice.

Contents

- Introduction and blood rheology
- Extracorporeal circulation
- Artificial kidney
- Artificial lung
- Vascular access
- Artificial liver and pancreas
- Organ transplantation
- Heart valves
- Cardiac assist devices
- Stents and vascular prostheses
- Pacemakers and defibrillators
- Tissue engineering

Initial competences

Biomechanics, biomaterials

Final competences

1. To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.
2. To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.
3. To report on technical artificial organ subjects focusing on the scientific correctness and soundness of the statements.

(Course size) (nominal values; actual values may depend on programme)

Credits  6.0  Study time  180 h  Contact hrs  67.5 h

Course offerings and teaching methods in academic year 2015-2016

A (semester 1) lecture  45.0 h
                        group work  22.5 h
Conditions for credit contract
Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract
This course unit cannot be taken via an exam contract

Teaching methods
Group work, lecture

Learning materials and price
pdf files on Minerva, hands out and reference papers

References
• Biomaterials, artificial organs and tissue engineering; L. Hench, J. Jones; ISBN-10:0-8493-2577-3

Course content-related study coaching

Evaluation methods
end-of-term evaluation

Examination methods in case of periodic evaluation during the first examination period
Written examination with open questions

Examination methods in case of periodic evaluation during the second examination period
Written examination with open questions

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation
not applicable

Calculation of the examination mark

(Approved)